

ISS Trailers Operations Manual

IMPASS

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Table of Contents
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1.0	INTRODUCTION.....	1
2.0	SET UP.....	2
2.1	DOCKING PROCEDURES.....	2
2.2	HABITATION (HAB) TRAILER.....	4
2.3	LABORATORY (LAB) TRAILER.....	6
2.4	POWERING UP AND MISC. PROCEDURES.....	8
3.0	DAILY OPERATIONS.....	12
3.1	START-UP	12
3.2	DAILY MAINTENANCE.....	15
3.3	CLOSE-UP	16
4.0	MAINTENANCE	18
5.0	CLOSE-OUT / PACK-UP.....	20
5.1	HABITATION (HAB) TRAILER.....	20
5.2	LABORATORY (LAB) TRAILER.....	22
5.3	POWERING DOWN AND MISC. PROCEDURES.....	23
5.4	UN-DOCKING PROCEDURES.....	23
6.0	TROUBLESHOOTING	26
7.0	HELPFUL HINTS	27

1.0 INTRODUCTION

This Operations Manual is provided with the International Space Station trailers to define the actions necessary to set up, operate, maintain, close out and take down of the trailers at any exhibit site. Information is also included as to how to troubleshoot common problems discovered during the operation of the trailers.

2.0 SET UP

There are only four (4) keys required to operate these trailers. One key is for the trailer rear doors/belly boxes/audiovisual cable box, one for the interior doors/panels, one for the trailers exterior small side access doors with silver latches, and one for the audiovisual controller digital drives in the right pre-show cabinet. Operations personnel **MUST** have the first two keys. The third key may be used where extra security is required. The fourth key(s), which are small round keys, are located on the tension connector to the equipment rack in the right pre-show cabinet. Normally these keys will not be needed, but they must remain in this cabinet.

2.1 Docking

1. Park the Habitation (Hab) trailer (license number NA7450) so the entry (rear of trailer) is facing the desired direction of entrance, and is on hard-surfaced, level ground. The front end (air conditioner end) of the trailer **MUST** be within 50 feet of the power supply (200 Amp, 208-230 Volt, 60 Hertz, Single Phase). The power may be supplied by a gas or diesel-powered 60-kilowatt portable generator. Once the trailer is in place, have the driver disconnect the tractor from the trailer.
2. Place wood footplates, located in the small right belly box of the Hab trailer, under trailer jack stands before lowering. Lower and level with the blue crank handle located in belly box nearest jack stands. **BE SURE TO RETURN CRANK HANDLE TO BELLY BOX.**
3. Three to four personnel are required to release the Entry platform (folded up on the rear of the Hab trailer). Deploy the platform by removing two $\frac{3}{4}$ " bolts at the holding hinges from each side and attach three adjustable aluminum legs and bolt pins. The $\frac{3}{4}$ " ratchet/adjustable wrench, bolt pins, and legs are stored in and near the black toolbox in the large belly box located on the left side of the Hab trailer. **BE SURE TO SCREW THE TWO $\frac{3}{4}$ " BOLTS BACK INTO THE PLATFORM RIGHT AWAY AND TIGHTEN WELL-DO NOT STORE ELSEWHERE.** Legs and bolt pins may be attached to platform stub-outs at front before or after release of platform depending upon the number of persons assisting. After completely lowering the platform, push it all the way in toward the trailer. If the platform is not completely deployed up to the trailer, an approximate 3-inch gap remains which can create a trip/fall hazard. Place blue wood shim plates under the legs if necessary. Level later before attaching steps. Level should also be in the large belly box on the left side of the Hab trailer.
4. Unlock and fully open the Hab trailer doors and chain to recessed hooks on each side of the trailer. Re-lock locks, and leave in place on doors.

5. Remove the steps and handrails from the large belly box on the Hab trailer and install the two angled handrails to the steps using a 9/16" ratchet wrench and open-ended wrench. Next, attach the steps onto the platform using two 3/4" bolts. Level the platform at this time so the step handrails don't infringe upon the platform handrails. The level can be found in the large belly box on the left side of the Hab trailer or in the Lab trailer work area.
6. Climb over the two bump-outs stowed on the floor of the Hab trailer and, using a 1/2" ratchet/adjustable wrench and flashlight, remove the four (4) bolts from the metal close-out panel at the right front side of the trailer. Leave the bolts in the panel. Handle carefully so as not to damage the panel or graphics. At least two gloved personnel should be outside on the ground to catch the panel as it is removed. In order to better control the panel, at least one person should be on the fully extended fold-out ladder. Set the panel aside for storage later in the work area to the left of the access door in the Laboratory (Lab) trailer.
7. Unlock/open the Lab trailer (NA7445) rear doors. Open completely, replace and lock the locks, and chain to the recessed side hooks on each side of the trailer.
8. Remove the six (6) black vinyl-covered foam bumpers from the floor of the Lab trailer. Remove the fold-out ladder, found in the left belly box of the Lab trailer, and configure to the extension ladder position. On the Lab trailer, vertically attach two of the long bumpers to the velcro along the outer edge of the back of the trailer. Place the other long bumper horizontally and flush under the top lip of the trailer. Place one of the short bumpers horizontally just under the floor level, and the other two short bumpers vertically along the edge of the passageway opening and resting on the bottom bumper.
9. Instruct the tractor driver as to what is expected for the docking of the trailers. He may have some helpful suggestions. Have the Lab trailer driver back up, **CAREFULLY AND SLOWLY**, centering with the Hab trailer passageway opening. There are two black tape guides on the Hab trailer to assist. It is helpful to have a person at the back of each side of the Lab trailer for this operation. Make sure that the drivers can see these personnel at all times. Someone should remain inside the Hab trailer at the opening to verify centering. When the trailers are about 24 inches apart check the centering visually and by measuring the distance between the two trailers on each side. The distance should be the same on both sides if the trailers are square. Once square, have the driver back up **VERY SLOWLY** until the bumpers are contacted and compressed slightly against the Hab trailer for a good seal. The bumpers **MUST NOT** be compressed too much or the silver walk-over plate inside **WILL NOT FIT**. Place the walk-over plate (should be stored on pre-show floor of Hab trailer) in place on the floors inside and assure it is firm and level before considering this a good docking. Do not wedge the plate in. There is a small amount of room for it to move side to side. **DO NOT RELEASE THE DRIVER/TRACTOR UNTIL THIS IS SATISFACTORILY ACCOMPLISHED**. Once the docking is considered good,

the driver should disconnect the tractor from the trailer. Jack the Lab trailer up and place the wood footplates under the trailer jack stands, making sure it is level. The blue jack stand crank is in the belly box near the crank. **BE SURE THE CRANK IS RETURNED TO THE BELLY BOX.**

2.2 Habitation (Hab) Trailer

1. Install the handrails on the front of the Entry platform.
2. Retrieve the doorstep/canopy support pole from the pre-show area. Flush mount screws for the pole are screwed into the Entry platform. Unhook chain from recessed hooks of left Hab trailer door. Close door enough to clear edge of Entry platform. Install doorstep/canopy support pole on the Entry platform. Open door until it stops in the doorstep/canopy support pole.
3. Deploy the Hab trailer bump-outs. The animatron astronaut/video monitor diorama is on the left, and the shower/toilet is on the right. To deploy the bump-outs, unlatch the exterior double doors on each one. Release the hasps located inside. Next, retrieve the twisted, square-ended release tool with the door handle from the black toolbox in the left belly box of the Hab trailer. Use this tool to unlock the doors through the exterior access holes. Open the doors fully.

NOTE: The bump-outs are operated by motors and cables in the upper trailer walls and are powered by the battery under the right rear of the trailer near the platform. Unlock the locked center access panel just to the left of the animatron diorama (left bump-out) and turn the appropriately marked black knob inside to raise the bump-outs upward and outward. The animatron bump-out is to be deployed first. **DO NOT** attempt to deploy both bump-outs at the same time.

NOTE: The bump-out motors will sound strained and there will be some creaking and groaning during this process, but this is normal. Operate **SLOWLY**. As the bump-outs reach the ceiling of the compartment they may hesitate and the switch will need to be turned in the other direction briefly and then back. It may be necessary for a person to assist the bump-outs by pushing them out some. **BE CAREFUL** however and do not assist before the bump-out is almost fully deployed. If the bump-out were to come loose **PERSONAL INJURY** could be experienced.

4. In accordance with step number 3 above, deploy the shower/toilet bump-out next. Store the foam pads on the floor in the small right rear belly box. Latch the exterior doors to the bump-outs outer edges. Be sure to stow the bump-out doors tool in the black toolbox in the belly box. Lock the bump-out controls access panel. Stow foam bump-out pads.

5. Retrieve blue baseboards from the pre-show area in the Hab trailer. They are marked on the back for their locations. Install the blue baseboards above and below the bump-outs. Baseboards going below the bump-outs tilt in at their top edges first. Boards going above the bump-outs must be latched into place. Two people are recommended to install the overhead boards.
6. Install the two blue NASA logo banners (rolled in a blue tarp in the pre-show area) to the bump-out doors by attaching the D-rings in their corners around the heads of the protruding screws inside the top/bottom corner of each door. Snap the banners in place on the sides of each door.
7. Check the air compressor unit in the small left rear belly box (located under the animatronic female astronaut diorama) of the Hab trailer. BE SURE the power is ON for the trailer AND at the multi-plug at the right front of the compressor. BE SURE that the black pressure bleed knob (right side, mid way) is CLOSED (black knob pushed fully toward rear of belly box) so pressure can build in the compressor tank to the preset 60 PSI to allow the animatron to operate properly. The animatron WILL NOT MOVE unless a minimum of 60 PSI is achieved. This can be checked at the pressure gauge to the rear right of center in the compressor belly box. In no instance should the pressure exceed 80 PSI. If 60 PSI is not being achieved, check the bleed knob to assure it is closed.
8. Remove fire extinguishers from ice chest secured in pre-show area. Place one fire extinguisher at the front left of the pre-show area. Place other fire extinguisher just inside the work/storage area at rear of Lab trailer. Store ice chest in work/storage area.
9. Deploy the Entry handicapped lift. A minimum of two (2) persons is required to do this. Remove the bolt pins inserted in the lift base plate and CAREFULLY and SLOWLY slide out onto the platform being careful to clear the frame and air dam blower unit adjacent to the left inside the trailer. "Walk" the lift to align it with the outline on the platform. Secure it with the five (5) to six (6) bolts provided and TIGHTEN WELL. Plug the power cables into the positive/negative ground connectors protruding horizontally from the trailer under the platform. Install the angled floor piece over the steel plate inside the trailer where the lift was stored. Install the interior gray-carpeted wall panel in the opening where the lift passed through and latch it at the top. This piece fits tightly into the opening and the bottom should be put into place first. Install the blue exterior metal panel over the exterior of the lift opening with screws.
10. Remove the three blue pleated skirts from the short belly box on the right side of the Hab Trailer. There are metal grommets at the top of each skirt that fit over twist fittings around the edges of both of the platforms. The shortest skirt fits on the left side of the entrance platform. The longest skirt will fit around the exit platform on the Lab Trailer. The remaining skirt fits around the front of the Hab

Trailer entrance platform. After placing the skirts, make sure to twist the fittings to secure the skirts to the platforms.

11. Retrieve the larger blue canopy from the pre-show area of the Hab Trailer.
Canopies and support brackets for both the Hab and Lab trailers are stored in the pre-show area of the Hab Trailer. At least two personnel will be needed to carry the canopy out of the pre-show area. Walk it all the way down the steps at the bottom of the platform of the Hab Trailer. Remove the wing nuts at the upper edge of the canopy and give them to the person who will be on the ladder. This is the canopy that will be placed on the Hab Trailer. Carefully place the fold-out ladder on the Entry platform. One person should be on the ladder and at least two people should be on the ground with the support brackets (the longer of the two sets of brackets) for the Hab Trailer canopy. Personnel on the ground should insert the support brackets into the openings on each end of the outer edge of the canopy. Once the person on the ladder is ready, the canopy can be walked up the platform and placed into position. The left most corner of the canopy will be removed from the support bracket and placed into the opening at the top of the doorstep/canopy support pole mechanism. That bracket will be used to support the canopy in the center, and will mount onto the railing at the front left edge of the Entry platform. The other support bracket will mount onto the railing at the right edge of the Entry platform. The person on the ladder will lift the canopy into place at the top of the trailer and use the wing nuts to secure it to the trailer. To prevent the material of the canopy from hanging loose, use the straps on the canopy to fasten around the support brackets. Use plastic tie wraps to secure the brackets to the railing on the platform and the top of the canopy. The smaller of the two canopies will be used on the Exit platform of the Lab Trailer.
12. Retrieve the “Welcome Aboard” sign from the wall of the pre-show area of the Hab Trailer. It should be attached by Velcro to the right side wall. One person should be on the ladder and at least one person should be on the platform with the sign. Once the person on the ladder is ready, the sign should be handed up to be put into place using Velcro.

2.3 Laboratory (Lab) Trailer

1. Attach the long, metal pitched roof cover plate over the top opening between the two trailers. Climb onto the Hab trailer roof, carefully, using the fold-out ladder configured into an extension ladder on the Entry platform. Bolt the cover to the Lab trailer roof lip with the three bolts/wing nuts.
2. Using a flashlight and a ½" ratchet wrench, (wrench should be on the floor of the storage area to the right of the Exit opening) remove the six (6) bolts from the top edges and two bars mounted on the stub-outs of the side access panel at the front

- right of the Lab trailer. Stow the panel in the storage area with the bolts, bars and ratchet wrench.
3. Install the Exit platform, legs and steps/handrails. They are located in the large belly box next to the Exit opening.
 4. Remove the handrails and steps and set aside. Install the platform by sliding the rods protruding on the left side all the way into the matching holes on the lower side of the trailer. Attach the two legs and blue wood shim pads. Secure the platform through the pin holes in the rods under the trailer with small bolts or cotter pins.
 5. Install the two angled handrails to the steps and then the steps to the left end of the platform with two $\frac{3}{4}$ " bolts. Do not install the platform handrail at this time. Level the platform at this time. The level can be found in the large belly box on the left side of the Hab trailer or in the lab trailer work area.
 6. Deploy the Exit handicapped lift. A minimum of two (2) persons is required to do this. Remove the holding rod/clamp from the ceiling above the lift by removing the two (2) clamp bolts and sliding the rod down out of its ceiling flange. Replace the bolts and clamp and store in the narrow storage area adjacent to the Exit. Release and latch the rear wheels of the dolly and tilt the dolly back CAREFULLY until the weight of the lift/dolly rests on all wheels. Square the lift/dolly with the Exit opening and CAREFULLY and SLOWLY roll it onto the platform. Turn it 90-degrees to the left. Stop when the lift is within about two (2) feet of the left end of the platform. Tilt forward CAREFULLY until the lift rests on the platform. Loosen and retract the dolly belt from the lift. Tilt the lift forward slightly and remove the dolly. Store the dolly in the large belly box nearest the Exit platform. "Walk" the lift toward the edge of the platform until it falls within the outline marked on the surface. Align the bolt holes and secure with the six (6) bolts provided and TIGHTEN WELL. Plug the two lift power cables into the positive/negative ground connectors under the inside cut-out at the front left corner of the Lab trailer (these are difficult to see). The negative ground cable (on the right) fits loosely, but be sure it is well seated. Check this cable if the lift seems to not have power. CAUTION-there is a build-up of black grease under the trailer near this location. It may contaminate skin or clothing and is difficult to remove (WD-40 will clean it from the skin).
 7. Install the handrail on the front of the Exit platform, making sure the side with Velcro is facing out.
 8. Retrieve the remaining blue canopy from the pre-show area of the Hab Trailer. At least two personnel will be needed to carry the canopy out of the pre-show area. Walk it all the way down the steps at the bottom of the platform of the Hab Trailer and carry to the Exit platform. Remove the wing nuts at the upper edge of the canopy and give to the person who will be on the platform. One person

should be on the Exit platform and at least two people should be on the ground with the support brackets (the remaining of the two sets of brackets) for the Lab Trailer canopy. Personnel on the ground should insert the support brackets into the openings on each end of the outer edge of the canopy. Once the person on the Exit platform is ready, the canopy can be walked up the platform and placed into position. The brackets will be used to support the canopy on each end of the railing of the Exit platform, as well as one extra support bar in the center. mount onto the railing at the front left edge of the Entry platform. The person on the Exit platform will lift the canopy into place just above the exit of the Lab trailer. The canopy will be placed into the metal lip and secured in place using the wing nuts. To prevent the material on the canopy from hanging loose, use the straps on the canopy to fasten around the support brackets. Use plastic tie wraps to secure the brackets to the railing on the platform and the top of the canopy.

2.4 Powering Up and Misc. Procedures

1. Assure power supply, (200 Amp, 195-277 Volts, 60 Hertz, **SINGLE-PHASE**) with 100 Amps available per trailer, is hooked up. This may be to house power or to a 60-kilowatt portable generator. 100 Amp, 110 Volt power is required for each trailer. **DO NOT APPLY GREATER VOLTAGE TO EITHER TRAILER OR COMPONENTS WILL BE SEVERELY DAMAGED CAUSING THE TRAILERS TO BE INOPERABLE.** Power should be connected at the rear of the docked trailers to minimize noise and to be away from guest Entry and Exit points. Only a qualified, licensed local electrician should connect cables to the power source. Connections for the trailers should be made as follows:

There is a power supply compartment on each trailer. The 200 Amp power supply compartment on the Hab Module (NA-7450) trailer is lockable and located to the right of the entry platform on the side, and the 100 Amp power supply compartment on the Lab Module (NA-7445) trailer is lockable and located at the rear right side. Each compartment is keyed differently and **MUST** be re-locked after powering up the trailers to prevent others from changing the voltage selector knob settings inside.

There are two power cables – one is a large diameter cable with a heavy duty connector at one end and three-wire (black, white, green) pig tails at the other; and the other is a smaller diameter cable with heavy-duty connectors at both ends.

Connect the large diameter cable into the Hab Module (NA-7450) 200 Amp power supply compartment to the large right connector, and to the un-powered supply (generator or facility). **BE SURE THE SLEEVED CONNECTOR IS FULLY INSERTED.** Route the cable down through the large pass-through opening below it in the bottom of the compartment to the power supply, and leave the pass-through cover in the box.

Connect the smaller diameter power cable into the Hab Module 200 Amp power supply compartment, small left connector, down through the left pass-through opening to the Lab Module (NA-7445), and up through its pass-through opening into the 100 Amp power supply compartment connector. Be sure to leave both pass-through opening covers in their respective compartments. **BE SURE THE SLEEVED CONNECTORS ARE FULLY INSERTED.**

Assure the ON/OFF breakers located to the left of the voltage selector knobs in each trailer power compartment are OFF (O). Assure all trailers interior breaker box breakers are OFF.

Turn ON the generator or facility power supply. Read the gauge at the power supply. It should read between 208 and 230 volts. The reading on the gauges in the two trailers power supply compartments will read the same.

Turn the breakers in both trailers' power supply compartments ON (I).

IMPORTANT – Turn voltage selector knobs in each trailer to the voltage most closely matching that shown on the meter above it (195, 208, 220, 230, 240 or 277 volts).

Turn both trailers' interior circuit breakers ON. The red-numbered digital meters above each breaker box will provide the voltage entering the breaker box (top number) and the voltage draw (bottom number). The toggle switch must be flipped up or down accordingly to see those readings. The electrician connecting the trailers to the main power supply can use these numbers as a reference to assure there is no over-voltage fed to trailer components.

NOTE: THE TWO FUSES LOCATED UNDER THE METERS IN EACH TRAILER POWER SUPPLY BOX ARE FOR THE METERS ABOVE THEM AND SHOULD NOT BE TAMPERED WITH UNLESS THE METERS FAIL TO REGISTER WHEN EXTERNAL POWER IS SUPPLIED. NEVER ATTEMPT TO REPLACE THE FUSES UNLESS ALL EXTERNAL POWER IS TURNED OFF.

Power up the trailers while the electrician is present and allow them to operate for one-half hour with the air-conditioners running before releasing him/her. Do not release electrician until the trailers and air conditioners are turned on and running properly. Be sure someone can access the electrician quickly if there is a power problem. To power up the trailers, turn the air conditioners ON at the two thermostats located on the upper left wall in Node 1 (Hab trailer) and on the back wall of the work area (Lab trailer). Turn other components ON at the breaker boxes by turning ON the Main breaker at the top and then each individual breaker one at a time. This eliminates loading the power supply all at once. Breaker boxes are located in the work area (Lab trailer) and behind the locked panel at the right end of the Hab trailer. Occasionally some of the fluorescent light fixtures may not come on right away but should within minutes to an hour after powering up. This may occur particularly with the right rear transparency of the EVA astronauts and the rotating Centrifuge. The Centrifuge itself does not rotate.

2. Attach the black water drain hoses (stowed with power cables) as appropriate by length to the drain tubes under each air conditioner. Run into drains, low spots of ground, or grassy areas to drain condensation away from guest passageways. This is a safety issue.
3. Unlock the blue audiovisual cable box that is located under the right front edge of the Hab trailer. Reattach the lock to the latch and lock. Open the small blue access door with silver latch at the right rear of the Lab trailer and open the metal box inside. Connect the color-coded audiovisual cables to the distribution box. It may be necessary to pull additional cable from the large conduit behind the cables storage box to do this.
4. The audiovisual and animatron programs should come ON automatically when the power is turned ON. The 19-inch Phillips monitor in the animatronic astronaut diorama MUST be turned ON each day by using the Phillips remote control located in the floor of the left pre-show cabinet. Point the remote to the open slot under the monitor screen to activate. The SHOW CONTROL buttons are the small white square ones located at the right bottom of the upper Alcorn McBride V16+ Show Controller.

Button 1	Auto Start
Button 3	ISS Logo (Space Station Imagination)
Button 4	Black ALL Screens
Button 5	Pause Main Show
Button 6	Restart When Main Show Has Been Paused

DO NOT OPERATE THESE BUTTONS UNLESS
ABSOLUTELY NECESSARY.

***NOTE:** It is normal for the animatron to talk after her lights have turned OFF. The animatron has seven (7) movements-mouth, eyes, blink, eyes left/right, head nod, head tilt, arms move. The computer, by the compressor in the small belly box of the trailer, is the one that controls the animatron. Both must be working properly for her to operate. IF she does not move on cue after being awakened by "Phil", your guide through the trailers, be sure the compressor is turned ON and the air pressure is at least 60 PSI. If she still doesn't move on cue, re-boot the computer in the bottom on the left pre-show cabinet. If she still doesn't operate after several tries contact the resources in the data book in the work area. **Try IMPASS and/or Exhibitech contacts first.**

5. Occasionally the voice/mouth movements by "Phil" in the Lab trailer may be slightly out of sync. Eventually, the program should sync-up. If not, check the hard drives in the digital video machines in the right pre-show cabinet. If a red light is ON on any of the machines push the hard drive in to re-seat. Another technique that may be used is to turn OFF the multi-plugs strips at the rear of the cabinet and at the right corner. Wait two minutes before turning it back on and hit the No. 1 Auto Start Mode button. If this doesn't sync-up the sound after several replays of the program, contact the resources in the data book in the work area.
Try IMPASS and/or Exhibitech contacts first.
6. Occasionally the 13 inch Sony video monitor, mounted in the upper right of the animal rack in the Lab module, may need to be turned ON by its remote (located in the floor of the left pre-show cabinet). BE SURE that it is at its proper sequence in the video program before this is determined.
7. An air curtain (downward blower) is located above the Entry and Exit to keep the air-conditioned air inside the trailers. These are noisy and use of the Entry unit is NOT encouraged during the video program. During programs the pull-curtain is used instead. The air curtain may be used during other periods, however, as desired. The use of the Exit curtain is recommended at all times if it doesn't seem to bother the guests during the Lab module video programs. The ON switch for the Exit air curtain is on the right wall inside the Exit storage closet.
8. Turn the emergency lighting fixtures ON at the end of the Hab module and to your right as you enter the Lab module.

3.0 DAILY OPERATIONS

3.1 Start-Up

1. It is recommended that at least four (4) people staff the trailers at all times. Staffing may vary as desired. More staff may be necessary, to manage exterior activities and perform crowd control prior to entering and after exiting, for larger crowds. Safety and security must be considered in the number of people staffing the trailer. One person operates the pre-show portion of the program which entails "welcoming" the guests, assisting with handicapped needs via the lift, separating guests into groups of 30 or less (15 is ideal), closing the pre-show curtain, starting the show, opening the folding door when the pre-show is over and inviting guests into the Hab module. One person assists with guiding the focus of guests through the video program in the Hab module and answering any questions or assisting in other ways, and assuring they move into the Lab trailer on cue. One person assists with guiding the focus of guests through the video program in the Lab module and answering any questions and assisting in other ways. One person assists with guiding guests through the last part of the program, answering questions, passing out literature, assisting with handicapped guests off the lift, monitoring child safety near the lift and assisting in other ways. Additional personnel may be stationed outside the Entry and Exits for safety and security purposes.
2. Operations personnel (one person is sufficient, two are recommended for safety/security reasons) should arrive to open-up and power-up the trailers each day. Allow more time if cleaning was not done at the end of the previous day or if repairs are necessary before start-up. In some cases outside repair or cleaning may be done with no interruption to the inside operations.
3. Unlock the left Hab trailer door, remove lock, rotate latch bar horizontally from far right to far left, replace and lock, and open and secure in doorstop/canopy support pole mechanism.
4. Remove the blue metal close-out panel on the right by removing six (6) screws (1 at top right, 5 along left side) with a screwdrill/Phillips head, and unlatch the slide bolt at the bottom right. Store door panel in left side belly box. Leave the Phillips head and screws in the bag on the back of the panel. The screwdrill should be returned to the work area in the Lab trailer.
5. Using a flashlight, proceed to the Lab trailer work area and power up the breakers and air conditioner as necessary. Turn the main breaker ON first and then each subsequent breaker. Power up the two emergency lighting units in each trailer, where they join, by turning the switch ON. Power up the Hab trailer breaker box and air conditioner as necessary.

6. Remove the four (4) bolts and bottom security bar from the inside of the Lab Exit close-out panel using a ½" ratchet wrench. Store the panel, bolts and ratchet in the storage closet adjacent to the Exit. Handle this panel CAREFULLY to avoid damage to the exterior graphics. Lock the closet.
7. Retrieve the "Welcome Aboard" sign from the wall of the pre-show area of the Hab Trailer. It should be attached by Velcro to the right side wall. Carefully place the fold-out ladder on the Entry platform. One person should be on the ladder and at least one person should be on the platform with the sign. Once the person on the ladder is ready, the sign should be handed up to be put into place using Velcro.
8. Plug the entry and exit handicapped lifts power cables into their connectors on the trailers. Test the lifts for operation. If there is no power to a lift, be sure the cables are connected securely. If a lift fails to Fold-In or Fold-Out, be sure the lift is FULLY up or down. If it still fails to fold in or out, disconnect the front actuator motor by unplugging its connector. Remove the hairpin cotter from the bottom actuator; remove the hairpin cotter from the horizontal quick-release pin at the top pin, and the pin from the yellow handle above the actuator. Remove the actuator and store OR reattach so that is not connected to the lift floor near the jaw-like lever. The lift can now be folded in or out manually. The lift can now be operated normally UP or DOWN as necessary. The lifts MUST be left at the platform level and ready to lower wheelchair guests in the event of an emergency.
*NOTE: the entry lift is a different model and works slightly different. Deactivation of the Fold-in, Fold-out actuator may be slightly different, though similar. A separate manual is provided on the work area shelf for more detailed information. Call 1-800-THE-LIFT for a local Braun lift services vendor for assistance if unable to operate.
9. Turn on Earthviews computer by removing front cover of white computer storage box directly below selection buttons for the Earthviews. Be sure to replace cover and secure before visitors arrive.
10. Normally, all interior doors/panels should remain locked. When fully manned, it may be more efficient to leave the right pre-show cabinet front door unlocked for easy access to audiovisual program start-up. If necessary, the door to the Lab work area can be left unlocked for frequent access to literature supplies, tools, snacks/drinks, other. However, the door should be locked if unattended.
11. The Ryobi screwdrill battery charger and one battery should be plugged in each day or left plugged in to come ON automatically with the power. A fully charged battery should be in the drill at all times.
12. The animatron and video programs should start automatically each day if not turned OFF the night before. See the Set Up instructions for assistance and trouble-shooting.

13. Volume controls for the videos in the pre-show and Hab module are located in the top of the left pre-show cabinet. Volume controls for the videos in the Lab module are in the locked cabinet immediately to your right as you enter the Lab module from the Hab module Node 1. These may be adjusted as needed.
14. The modules should be cleaned at the beginning or end of each day depending upon local schedules and assistance available. Use cleaners/rags, brooms, mops and vacuum that is available in the work area. Re-supply as necessary. NEVER use solvent-based cleaners unless you are thoroughly familiar with its effects on the surface being cleaned. If in doubt, resort only to a mild, glass cleaner-like, product. Trash collected in the work area should be thrown out each day to prevent build-up in an area where there are potential ignition sources (electrical, lights, air conditioner, breaker box, screwdriver battery charger, lift battery and trickle-charger).
15. Outdoor cleaning of the trailers should be accomplished as deemed necessary. Policing of the grounds around the trailers is a good idea to present the best image. THIS WON'T NECESSARILY BE DONE BY SPONSORING ORGANIZATIONS. Identify the closest trash container for disposal of such.
16. Place the orange safety cones under any potential head-contact areas (lifts, bump-outs, etc.).
17. Prior to the start of operations each day, trailers staff should verify that:
 - Entrance and exit are free of obstacles or other unsafe situations (i.e., water draining from air conditioners which might cause a slip hazard). For example, a water hose is provided to connect to the Lab trailer air conditioner drain to carry water away from the exit steps departure area.
 - Wheelchair lifts have been cycled, are operable, are left in the extended position level with the platforms ready to accept wheelchairs, and downward deployment to evacuate guests.
 - Wheelchair occupants allowed inside the trailers must be limited to the number of operable lifts at any time to allow emergency exit at either or both of the two lifts.
 - Trailers staff must be in the immediate vicinity of the lifts when wheelchair occupants are in the trailers in order to assist in an emergency evacuation, and to prevent children from playing on the lifts.
 - Black and yellow safety tape is secured to all low personnel passageways and bulkheads as necessary.
 - Both emergency lighting units are operating properly. These should be turned off during un-powered periods to reduce the drain on batteries.
 - All nine smoke detectors are operating properly.
 - Volunteer personnel know the location of, and can access, fire extinguishers.
 - Flashlights are working properly.
 - Interior lighting is operating properly.

Trailer isles are clear.

Volunteer personnel know the location of, and can access, flashlights in the event of a lighting failure.

At least one person of the trailers staff is in each trailer during operations.

Number of guest and trailers staff occupants does not exceed agreed-upon limits of up to 15 visitors per module.

Operational compartments (work area, storage, breaker boxes, battery boxes, compressor belly box, storage belly boxes, audiovisual control cabinets, bump-out control compartment, etc.), their contents and related safety issues, are identified to volunteer staffers in case emergency access is required during or after event hours.

Any slip, trip, or fall hazards are assessed and fixed prior to operations.

All power cables are secured under trailers as much as possible and assessments of the venue power supply (breaker box or generator) area made to identify potential hazards to guests.

Continuous assessments of guest access (particularly younger guests) are exercised to assure safety.

18. Install sound system (TBD) as necessary.

3.2 Daily Maintenance

1. Repair/clean exterior issues as guests are in the trailers or before or after daily operations. Complicated or unsafe maintenance must be done before or after hours of operations.
2. Keep queue lines, waiting to enter the Hab trailer pre-show area, back at least 20 feet to prevent crowd noise from interfering with the pre-show inside and to allow for emergency exiting, if necessary.
3. Check for safety issues inside and outside of the trailers each day. Shut down operations and/or fix serious issues at once.
4. Re-supply literature, from the storage areas inside the trailers or from the large right Hab trailer belly box, as necessary. It is best to relocate supplies from belly boxes during Start-Up each day for safety and security reasons. Except for high-volume venues the storage area to the right of the work area door functions well as a literature staging area.
5. If rain occurs or threatens to excessively affect the Entry and Exit, temporarily cease operations. Install four (4) shower curtain tension rods (one at top and bottom and two in the middle) and wrap the 6 x 8 foot lightweight tarp over the top and under the bottom rods and tighten. Entry rods and tarp are located in the left pre-show cabinet on the right side.

6. Exit rods and tarp are located in the storage closet next to the Exit opening. Repeat the above steps to set up the Exit curtain. This should be tested in advance of weather to familiarize staff with the process.

***NOTE:** This is only meant for unexpected hard blowing rains that might cause problems inside the trailers. For predictable long-duration weather, it may be desirable to close out the trailers as one would at the end of the day. For long-duration rains, two larger tarps are provided with bungee cords in the work area to cover the two handicapped lifts.

3.3 Close-Up

1. Unplug the lift power cables from the trailer connections and place on the lift platform. Place the controls over the top of the lift. If there is a threat of rain overnight, cover the lifts with the large blue tarps and place a bungee cord, found in the work area, around the tarps to hold in place.
2. Clean the insides of the trailers as necessary using the small vacuum, brooms and cleaners/rags.
3. Install the close-out panel at the Exit opening using the ½" ratchet wrench, bolts and lower close-out bar from the storage closet near the Exit. Install the screw in the upper right bolt first, as it is the most difficult to align. Leave the ratchet wrench in the storage closet. It is recommended you also have a flashlight at this time.
4. Install the blue metal closeout panel at the left side (looking out) of the Entry opening by using the screwdriver and a Phillips head bit to screw the six (6) screws into the opening frame through the small holes in the panel. To do this, hold the panel up flush against the outside edge of the carpeted frame starting with the upper right and left screws, the remaining left screws and then the sliding bolt at the bottom. Leave the screwdriver in the pre-show area for removal of the blue panel the next day.
5. Proceed to the work area end of the Lab module with a flashlight. Turn OFF the Lab module air-conditioner, the main breaker and then the smaller breakers. Proceed to the trailers docking joint and turn OFF the two emergency lighting units. Turn OFF the Hab module air-conditioner. Unlock the Hab breaker box panel and turn OFF the main breaker and then smaller breakers.
6. Carefully using the fold-out ladder on the Entry platform, remove the "Welcome Aboard" sign and hand down to person on the platform providing assistance. The sign should be placed in the pre-show area. Replace the ladder in its original

location. Make sure to remove the sign each night so the lettering isn't damaged by the trailer door closing against it.

7. Leave the flashlight off and in the pre-show area for use the following morning.

8. Close and lock the left rear Hab trailer door.

***VERY IMPORTANT:** The air compressor causes the "Dr. Emily" animatron inside to move, along with the commands of the computer in the left pre-show cabinet. Proceed to the small belly box on the left side of the Hab trailer, open it and bleed the air pressure from the air compressor, by turning the black knob/lever on the mid right side toward you. The bleeding air/water/oil will make a loud hissing sound and will wet/discolor the ground beneath. Bleed until the gauge at the rear right of center reads zero (0). **DO NOT FORGET TO TURN THE BLACK KNOB/LEVER BACK TO THE CLOSED POSITION. THERE IS NO NEED TO TURN OFF THE MULTI-PLUG POWER STRIP AT THE RIGHT FRONT.** Close the belly box and latch or lock, depending upon the security needs for the venue. **THIS MUST BE DONE AFTER THE POWER TO THE TRAILERS IS TURNED OFF OR THE COMPRESSOR WILL CONTINUE TO RUN AND TRY TO RE-PRESSURIZE WHILE IT IS BEING BLED.**

9. The house power supply or generator powering the trailers may now be turned off for the day. This is not necessary for the trailers but may be desirable by the sponsor.

4.0 MAINTENANCE

1. A local hardware store should be located upon arrival at the new site. This will help expedite things if it is necessary to re-supply or repair the trailers. Keep all receipts for purchases and submit them with your Travel Expense Report.
2. Occasionally, lubricate all moving metal parts with WD-40 or a light oil. This particularly applies to the handicapped lifts and the shafts upon which the two bump-outs rotate (can be seen from the outside when the bump-out doors are open).
3. Check the operation of the emergency lights, flashlights, and smoke detectors once a week while the trailers are in operation. Push the plastic tab on the right side of the emergency lights while they are ON and the lights should light. Push the test button on the smoke detectors and they should sound off. If these are not functioning properly, replace them immediately.
4. Replace any light bulbs that may remain out through most of a day (some fluorescent lights will delay coming on in the mornings for some time). Light bulbs in cases/cabinets behind racks are difficult to get to and this maintenance should be done after or before operating hours. Allow from 30 minutes to an hour to change one bulb and this may require two people. If you are unable to repair a display for some reason, contact an IMPASS contract person from the list on the work area wall or in the ISS Trailers Data Book and make them aware of the problem. They may assist you remotely or suggest you turn off the device for repair when the trailers return to Houston.
5. Air compressor maintenance:

Check the air compressor gauge each morning to assure it is pressurizing to 60 PSI (pounds per square inch). Pressure should not exceed 60 PSI and definitely no more than 80 PSI. If the pressure is approaching 80 PSI, refer to the Silentaire compressor brochure in the ISS Trailers Data Book in the work area and reduce the pressure using the pressure regulator above the gauge. Lift up the knob and turn it counterclockwise to reduce the pressure. If the pressure remains too low after the compressor motor turns OFF, adjust the knob clockwise until the gauge reads 60 PSI. If you are having difficulty with this, call Crowe Equipment Co. Their numbers are on labels all over the compressor. Talk to Emmette Crowe or Roger. **DO NOT EXPERIMENT WITH THIS EQUIPMENT.**

Once a week, check the oil level in the round glass sight glasses on the left side of the two black motors **WHILE THE COMPRESSOR IS OFF**. The oil level should be at the halfway point. If it is too low, fill with the special Silentaire lubricant in the plastic bottles on the shelf in the work area. Fill at the openings shown in the Silentaire brochure for the Val-Air model.

Drain and replace the oil every 150 hours of operation (15-20 show days). Use ONLY the Silentaire lubricant provided. More lubricant can be Federal-Expressed from Crow Equipment. Their phone number is (713) 861-7800. The lubricant costs \$15.89 per bottle (as of Feb 2000), with a 15-percent discount given when a case of six (6) is ordered at one time.

6. Air conditioners/heat pumps maintenance:

DO NOT ATTEMPT TO SERVICE THE AIR CONDITIONERS/HEAT PUMPS UNLESS THE POWER IS OFF AT THE THERMOSTATS AND AT THE LARGE LEVER SWITCHES ON THE EXTERIOR SIDES OF THE UNITS! Check the filters every three (3) months. If significantly clogged or dirty, clean or replace. Filters may be cleaned by thoroughly vacuuming and brushing. The filter on the Lab trailer air conditioner/heat pump can be accessed by removing the interior return air grill on the end wall of the work area and accessing the filter tray up above that point. Use the same size filter as those removed. Extra filters may be in the work area. The filter tray on the Hab trailer unit can be accessed by removing the exterior middle vent cover panel with the Bard logo on the front of the unit. A number of screws must be removed for access. Check the cooling coil, in the air conditioner/heat pump, every three (3) months. If the coil is dirty, rinse it off well with a mild water pressure.

7. For other maintenance/troubleshooting, refer to the Bard manuals in the ISS Trailers Data Book in the work area. Special TORX security screws are used throughout the trailers. The indentations on the screw heads are star-shaped with a pin in the middle. Special bits for these screws are located in the Ryobi screwdrill case in the black compartment. TAKE SPECIAL CARE NOT TO LOSE THESE BITS.

5.0 CLOSE-OUT / PACK-UP

Some close-out/pack-up can be done BEFORE operations cease, in order to expedite close-out at the end of an event. Examine such things as organization of the work area and tool boxes (main and black belly box toolbox) to assure there are no loose items that may be damaged during transport; removal of trash accumulation in the work/storage areas; reorganization of tools, bolts and parts; removal of the roof cover plate (if rain is not threatening); removal and draining/drying and stowage of the air conditioner water drain hoses if this does not adversely affect guest pathways; etc.

5.1 Habitation (Hab) Trailer

1. Remove the two (2) blue NASA logo banners from the bump-out doors. Roll both onto the cardboard carpet tube with the logo facing out and then roll them up in the 10 x 10 foot, light blue tarp and store in the pre-show area.
2. Unscrew/remove the blue metal cover panel on the right side of the Entry opening. With it, store the screws on the floor of the pre-show area. Unclip and remove the gray carpet wall panel behind the opening, and the angled gray floor ramp below, and store on the pre-show area floor. Fully fold up the Entry handicapped lift, secure its cables to the lift and slide it carefully, using two persons, into the opening at the right of the Entry until it rests securely on the metal plate in the floor. One of the bolts fits into the lift and a hole in the plate. Secure this bolt. Store the other bolts with the lift. Be sure that the right side of the lift, when facing it, will be restrained from falling over by the edge of the large air curtain unit mounted above the door during transport.
3. Install the Hab close-out panel, which was set aside earlier, onto the opening by bolting all four corners in place. This will require three persons, two to hold the panel outside and one inside to bolt. Bolt panel in fully at all four corners with black rubber washered bolts. To do this, the person inside will need a flashlight and need to climb over the two bump-outs inside.
4. Remove the canopy from the Entry platform and store it against the left wall of the pre-show area. Be sure to replace the wing nuts in the canopy before storing it.
5. Remove the handrails from the Entry platform and set aside.
6. Close door of Hab Trailer enough to remove the doorstep/canopy support pole from the left side of the Entry platform. Replace flush mount screws in the platform. Place pole in the pre-show area. Fully open door and chain to recessed hook on side of Hab Trailer.

7. Remove baseboards from above and below the bump-outs and store in the pre-show area.
8. Retrieve fire extinguishers from pre-show area in Hab trailer and work/storage area at rear of Lab trailer. Wrap extinguishers in blanket and place in ice chest. Secure in pre-show area.
9. Retrieve all flashlights and place at front left of pre-show area.
10. Unlatch the exterior bump-out doors from the bump-out exterior edges on the Hab trailer. Assure that the doors remain fully open so as not to interfere with the retracting bump-outs. Unscrew the right interior vertical frame member from the shower/toilet bump-out. Leave the screws in the frame and store on the pre-show area floor for transport. Retrieve the small foam cushion pieces in the small right Hab trailer belly box and place on the interior floor of the trailer where the edges of the bump-outs will rest when retracted. Unlock the center access panel to the immediate left of the animatron bump-out. Use the black horizontally rotating knobs inside to retract the bump-outs. **DO NOT ALLOW PERSONNEL TO STAND IN THE WAY OF THE BUMP-OUTS AS THEY RETRACT. IF A BUMP-OUT WERE TO FAIL SERIOUS PERSONAL INJURY COULD OCCUR.** Retract the shower/toilet bump-out first, **VERY SLOWLY AND DELIBERATELY.** It is normal to hear some creaking and snapping sounds, and the bump-out motors groan. Adjust the visible foam pieces on the floor as the bump-out is almost seated. **VERY SLOWLY AND DELIBERATELY,** retract the animatron bump-out next. The bump-out may free-fall for a short distance after it retracts about mid way. Adjust the visible foam pads, as necessary, when it is almost seated. **BE SURE THE CABLES ON EACH BUMP-OUT ARE FURTHER RETRACTED SO THAT THEY HAVE SOME SLACK AND THERE IS NO TENSION REMAINING ON THEM.** Close and lock the control knob panel. Get the twisted, square-ended doorknob tool from the black toolbox in the left side Hab trailer belly box. A person outside must close the two bump-out doors on each side, right door first, and push in hard while a person inside, sitting on the bump-outs, pulls on the vertical latching rod. Using the twisted, square-end door handle tool, the outside person should insert the tool in the hole in the lower right of the left door and twist to latch. Both the inside and outside person should test the doors to assure they are latched and secure. The inside person should then latch the hasps inside on the doors. **BE SURE TO RETURN THE TWISTED, SQUARE-END DOOR HANDLE TOOL TO THE BLACK TOOLBOX.**
11. Carefully using the fold-out ladder on the Entry platform, remove the “Welcome Aboard” sign and hand down to person on the platform providing assistance. The sign should be placed in the pre-show area. Replace the ladder in its original location.

12. Remove the Hab trailer close-out panel and bolts and set outside the trailer near the right front end, but out of harm's way.

5.2 Laboratory (Lab) Trailer

1. Check work area to assure there are no loose items that might cause damage during transport, that all trash has been disposed of, that there are no items on the floor that might impact the battery/trickle charger in the left rear corner, that any coolers are empty of ice/water, that the screwdriver case is closed and latched, that any re-charging units (screwdriver battery, cell phone, etc.) are secured or unplugged and stored, the large tool kit lids are secured and that the black tool kit is not left in the work area but is in the large belly box on the left side of the Hab trailer, etc.
2. Fold the Exit handicap lift up and in electrically, or manually (if electrical operation is faulty) if necessary. For manual operation, the black actuator motor must be disconnected. Simply push up on the lift floor until the unit folds in completely. Unbolt the lift from the platform just prior to stowing. Wrap the cables up on the top part of the lift out of the way so they aren't subject to damage. Remove the handrail from the platform at this time and set aside. Remove the large red dolly from the long belly box near the platform and release the belt so it will fit around the lift. "Walk" the lift back away from the edge of the platform about 24 inches. Tilt the lift carefully forward, just enough to slip the blade of the dolly under it completely and centered. Clip the belt around the front of the lift securely, and tighten with the ratchet handle until very tight. Two persons should then tilt the dolly back while deploying the rear wheels and assuring they are latched in place. Roll the dolly back, being careful to NOT step off the edge of the platform. When the dolly/lift are approximately centered on the Exit opening, turn to square up with the opening and carefully roll the dolly backwards through the opening so that the top crossbar above the lift is approximately centered under the grommet and hole in the ceiling. Tip the dolly/lift to an upright position and retract the rear folding wheels and latch. Retrieve the transport holding fixture for the lift (a 1 inch steel rod with one flat plate welded on one end and another bolted to it with two large bolts) from the floor of the storage closet next to the Exit. Unbolt the plate and then push the rod up into the hole in the ceiling and allow the bolts on the welded plate to straddle the lift crossbar. Bolt the other plate tightly to it using a wrench. Test the dolly/lift to assure they are well secured and will not move. **IF THIS DOLLY/LIFT COMES LOOSE DURING TRANSPORT MAJOR DAMAGE CAN OCCUR IN THE LAB MODULE.**
3. Remove the Lab close-out panel and install in the opening with the two (2) black rubber-washed bolts at top and the two slotted security bars with new 3½" bolts, **WITH WASHERS**, at each of the four stub-outs on each side of the panel. These security bars overlap the vertical stainless steel opening edge protectors on each

side and should be bolted tightly to the stub-outs to prevent inadvertent panel opening during transport. Be sure these bars are secured well.

4. Remove the canopy from the Exit platform and store it against the left wall of the pre-show area of the Hab Trailer. Be sure to replace the wing nuts in the canopy before storing it.
5. Remove the Exit platform steps with handrails attached. Remove the handrails and set aside with the steps. Remove the Exit platform by removing the security bolts or pins that are placed through the holes at the ends of the platform rods that protrude into the underside of the Lab trailer. Two to four persons should then, CAREFULLY, pull and lift the platform away from the side of the trailer and set it into the large belly box near the Exit. Set the Exit steps on top of the platform. Next, set the handrails on the platform. Set all of the platform/handrail/lift bolts in the steps. Store the two platform legs and blue wood shims in this belly box too. Close and latch the belly box.

5.3 Powering Down and Misc. Procedures

1. Turn air conditioners OFF at thermostats and at large switch boxes mounted to exterior sides of units.
2. Power-down the trailers by turning off the air conditioners/heat pumps at the thermostats, and the breakers at the two breaker boxes as for Daily Operations, the emergency lighting units should be turned OFF. The two outside power switches on each side of the air conditioners should be turned OFF.
3. Have the venue electrician disconnect the trailer's two power cables from the house, or generator, power supply. Disconnect the two cables from the trailers at the orange connectors by twisting the upper security ring off and up and pulling (this requires some effort) the connector straight out. Roll up the cables and store in the small belly box on the left side of the Lab trailer. Be sure the black air conditioner water drain hoses are also stored in this belly box at this time.
4. BLEED THE AIR COMPRESSOR IN THE SMALL LEFT SIDE BELLY BOX OF THE HAB TRAILER BY TURNING THE RIGHT REAR BLACK KNOB/LEVER TOWARD YOU. When the gauge at the right of the center reads 0 PSI, close the knob. Shut and latch the belly box.

5.4 Un-docking Procedures

1. Disconnect the yellow/blue/red/green/white audiovisual cables from the box under the right rear of the Lab trailer. The white connectors have push releases and the others are bayonet connectors requiring a short turn to release. Close and

- securely clip latch the audiovisual interface box storage compartment door. Push the cables **COMPLETELY** into the small blue box located under the right front side of the Hab trailer. This requires fishing some of the covered cable into the large conduit behind the box. Latch and lock the blue box. **THIS IS IMPORTANT IN ORDER TO KEEP THE CABLES FROM INADVERTENTLY SPILLING OUT ONTO THE HIGHWAY AND BEING DESTROYED DURING TRANSPORT.** If this were to occur, the color codes are also taped to the upper part of the cable set, where they become shrouded. The color codes on the connectors are in the audiovisual distribution box under the Lab trailer.
2. Remove the long, metal pitched roof cover plate over the top opening between the two trailers. Climb onto the Hab trailer roof, carefully, using the fold-out ladder configured into an extension ladder. Store the cover plate on the floor at the rear of the Lab trailer once trailers are undocked.
 3. The tractor driver may now crank the jack stands up on the Lab trailer and connect his tractor. Remove and store the wooden jack stand pads in the large belly box on the right side of the Lab trailer. Store the blue jack stand crank in the large belly box nearest the Lab jack stand.
 4. Have the driver pull the Lab trailer, **SLOWLY AND CAREFULLY**, away from the Hab trailer about 10 feet and turn his tractor **OFF**. Remove the six black foam bumpers from the rear of the Lab trailer and store on the floor inside. Close and lock the rear doors of the trailer and secure the two spring-loaded catches in the welded angle below the doors.
 5. Climb over the two bump-outs stowed on the floor of the Hab trailer and, using a ½" ratchet/adjustable wrench and flashlight, replace the four (4) bolts from the metal close-out panel at the right front side of the trailer. At least one person will need to be outside of the trailer holding the panel in place until it is tightly bolted in.
 6. Close and lock the two rear doors of the Hab trailer.
 7. Remove the Entry platform steps with handrails attached and then remove the handrails. Store in the left side, long belly box of the Hab trailer, steps first and then all Entry handrails, with the bolts in the steps.
 8. Using three personnel, two persons pull out the Entry platform away from the trailer as far as it will go and then lift up to the back doors of the trailers. A third person with a ¾" ratchet wrench then removes the two side bolts and bolts the platform to the two hinges on the rear corners of the trailer. **BE SURE BOLTS ARE COMPLETELY TIGHTENED.** Remove the holding pins/bolts from the three support legs, and then remove the legs and store bolts and legs with the handrails and steps.

9. The second tractor driver may now crank the jack stands up on the Hab trailer and connect his tractor. Remove and store the wooden jack stand pads in the small belly box on the right side of the Hab trailer. Store the blue jack stand crank in the large belly box nearest the Hab jack stand.

NOTE: The blue jack stand cranks are located in the belly boxes on each trailer nearest the jack stands (left end of left side long belly box on Hab trailer and left end of left side long belly box on Lab trailer). The tractor driver will normally perform the cranking function so he/she can back their tractor under the trailers to hook on. Remove the wood pads under the stand feet and store in the small belly box on the right side of the Hab trailer. Close and latch the belly box. **BE SURE THE JACK STAND CRANKS ARE STORED BACK IN THEIR BELLY BOXES.**

10. Verify that all of the belly boxes are secured and locked.

11. The trailers are now ready for transport.

6.0 TROUBLESHOOTING

1. Occasionally, the Entry handicapped lift will not fold out. The lift must be fully up and folded in before it will fold out. Operate all functions (Up, Down, Fold-In, Fold-Out) fully and you should be able to get it to operate properly. If not, refer to the Set Up instructions referring to manual fold-in/out of the exit lift and/or read the Braun lift manual provided in the ISS Trailers Data Book in the work area. If unable to get the lift(s) to fold-in or out, manually operate the lift. This will not affect the Up and down operations, which are the most important.
2. See the Set Up instructions for troubleshooting the "Dr. Emily" animatron.
3. See the Silentaire compressor brochure for compressor troubleshooting or call Crow Equipment Co. (Emmett Crow or Roger) for assistance. Be sure they know it is the Val-Air custom-built unit that Mr. Crow built for Exhibitech in League City for the ISS Trailers in January/February 2000.
4. Bard air conditioner troubleshooting can be referred to in the manuals in the ISS Trailers Data Book. If unable to satisfactorily troubleshoot, call an air conditioner/heat pump specialist. Bard will need to know that it is a wall unit and is an air conditioner/heat pump combination. Bard may want the model numbers that are in the manuals. Bard may also need to get in touch with Bard in Ohio to troubleshoot.
5. The glovebox in the Lab module includes two black gloves. As these wear out, they need to be replaced. An extra pair will be stored in the Lab module work area on a shelf. Ten additional pairs reside at the Johnson Space Center, Bldg 2 Rm 172 at phone number 281-483-8618.
6. If the battery for the bump-out is discharged, it can be connected to a vehicle to operate the bump-outs. Special precautions **MUST** be taken as with any automobile battery jump-starting procedure to assure safe operation. Park the vehicle as close to the trailer as possible but not touching the trailer. Connect the red positive jump-start cable carefully to the positive anode on the trailer battery being careful not to contact other parts of the trailer, connect the other end of the positive cable to the jumping vehicle. Connect the black negative cable to the trailer battery negative anode and then to a metal part near the engine of the jumping vehicle. **DO NOT** connect the negative cable to the negative anode of the battery on the jumping vehicle. Hydrogen gas from the battery can be ignited causing an explosion and danger to personnel and the vehicle/trailer.

7.0 HELPFUL HINTS

1. When opening belly boxes or other compartments, be careful of sharp metal edges and pinch points.
2. Use proper lifting/handling procedures when removing and installing large, heavy components.
3. There are opportunities for head contact at trailer corners, at air conditioning units, at wheelchair lifts, at bump-out doors, and when crawling under platforms to secure hardware. Be deliberate, don't be rushed and proceed with caution.
4. Proceed cautiously when using ladders to attach banners on bump-outs and when deploying the trailers interface roofing strip on top of the trailers.
5. Proceed cautiously when entering the work area as the access door is lower than normal and the step inside is steep.
6. Be cautious in the handling of thin sheet metal components to avoid hand cuts. Use gloves or rags to protect hands where necessary.